

Patent Claims:

1. An apparatus for generating a droplet target comprising at least one receptacle for receiving a target liquid in which high pressure is realized by a non-reactive gas, an electromagnetic valve switching in the ms range connected with the receptacle, and a nozzle, characterized by the fact that the nozzle is structured as a supersonic nozzle (4); that the valve (1) is connected to the supersonic nozzle (4) by way of an expansion channel (2); heating means (3) formed around the expansion channel (2) such that the temperature can be set at a level at which a supersaturated vapor is formed in the expansion channel (2); and an insulation (5) is provided between the electromagnetic valve and (1) and the heating means (3).
2. The apparatus in accordance with claim 1, characterized by the fact that the pulsed electromagnetic valve (1) operates at a pulse duration of 2 ms.
3. The apparatus in accordance with claim 1, characterized by the fact that the length of the expansion channel (2) is from several mm to several 10 mm and that its diameter is from several 100  $\mu\text{m}$  to a range of mm.
4. The apparatus in accordance with claim 1, characterized by the fact that the supersonic nozzle (4) has a conical opening angle  $2\Theta$  of several degrees to several 10 degrees, an input opening of a diameter of several 100  $\mu\text{m}$  and a conically shaped section of a length of several mm.

5. A method of generating a droplet target, comprising the method steps of:
- filling a target liquid into a receptacle in which a high pressure is realized by a non-reactive gas;
  - 5 - brief opening of the receptacle by a pulsed electromagnetic valve;
  - pulsed feeding of the target liquid into an expansion channel;
  - heating the expansion channel such that a supersaturated liquid vapor is generated;
  - 10 - cooling the gas during its passage to a supersonic nozzle connected to the expansion channel; and
  - discharging liquid droplets through the discharge opening of the nozzle.
- 15 6. The method in accordance with claim 5, in which a pulsed electromagnetic valve with a pulse duration in the ms range, in particular 2 ms, is used.
7. The method in accordance with claim 5, in which
- 20 an expansion channel of a length of from several mm to several 10 mm and a diameter of from several 100  $\mu$ m to the range of mm is used.
8. The method in accordance with claim 5, in which
- a supersonic with a conical opening angle  $2\Theta$  of several degrees to several
- 25 10 degrees, an input opening of a diameter of several 100  $\mu$ m and a conically shaped section of a length of several mm is used.

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